


Adaptation

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The background of the slide is a solid blue color. In the bottom right corner, there are several sets of concentric circles, resembling ripples in water, rendered in a lighter shade of blue. These circles are of varying sizes and are positioned in a way that suggests they are spreading outwards from a point of impact.

What is Adaptation?

Adaptation is the change by living organisms that allows them to live successfully in an environment.

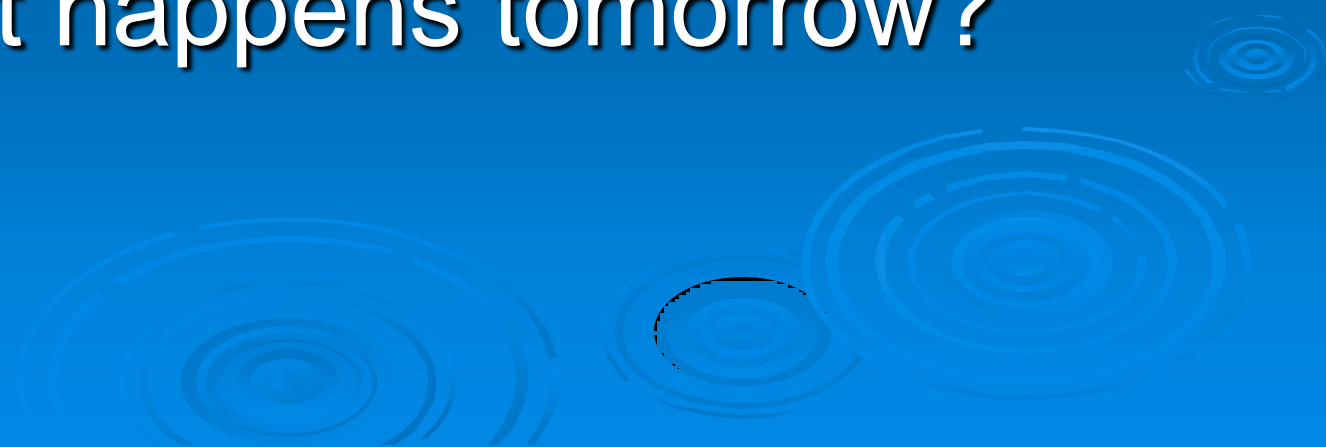


Adaptation

If not now, when?

If not today,
then...

What happens tomorrow?



Upper Connecticut River Valley - June 2005



Southwestern NH – October 2005



Central NH - May 2006



Eastern NH - April 2007



Deerfield Flooding April 23, 2007



VT and Upper Valley July 2007



Union Leader
August 9, 2008
Flash Flooding



Bath NH

A 12-foot boat and dock were discovered wedged to the top of the Spaulding Dam in Rochester yesterday morning.

“The railroad at the Weirs has totally washed out”

Emergency management spokesman said several roads were damaged enough that they will have to be rebuilt, not merely regraded and repaved.


What should we do?

We have to balance mitigation and adaptation planning aspects in the areas of:

- ▶ Land use
 - ▶ Transportation
 - ▶ Natural resources management
 - ▶ Structure and site design
 - ▶ Public health
 - ▶ Public safety
 - ▶ Public infrastructure
 - ▶ Economic development
 - ▶ Social services
- 

Adaptation planning continues to involve many **uncertainties**.


Every community is unique in its setting and people, and therefore faces environmental and social vulnerabilities that will differ from those of neighboring communities.



We face two types of risk:

- ✓ Risk from climate change impacts
- ✓ Risk of incorrect commitment of, and therefore wasted, resources

Uncertainty: The difficulty of precisely assessing the amount of impact, or the probability of occurrence.



STERN REVIEW: The Economics of Climate Change

The Review estimates that:

If we don't act, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever.

If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20% of GDP or more.

In contrast, the costs of action – reducing greenhouse gas emissions to avoid the worst impacts of climate change – can be limited to around 1% of global GDP each year.

July 2005

What do we know?

Gordon et al. (1992) found that climate change induced increases in rainfall will disproportionately increase the most intense storms.

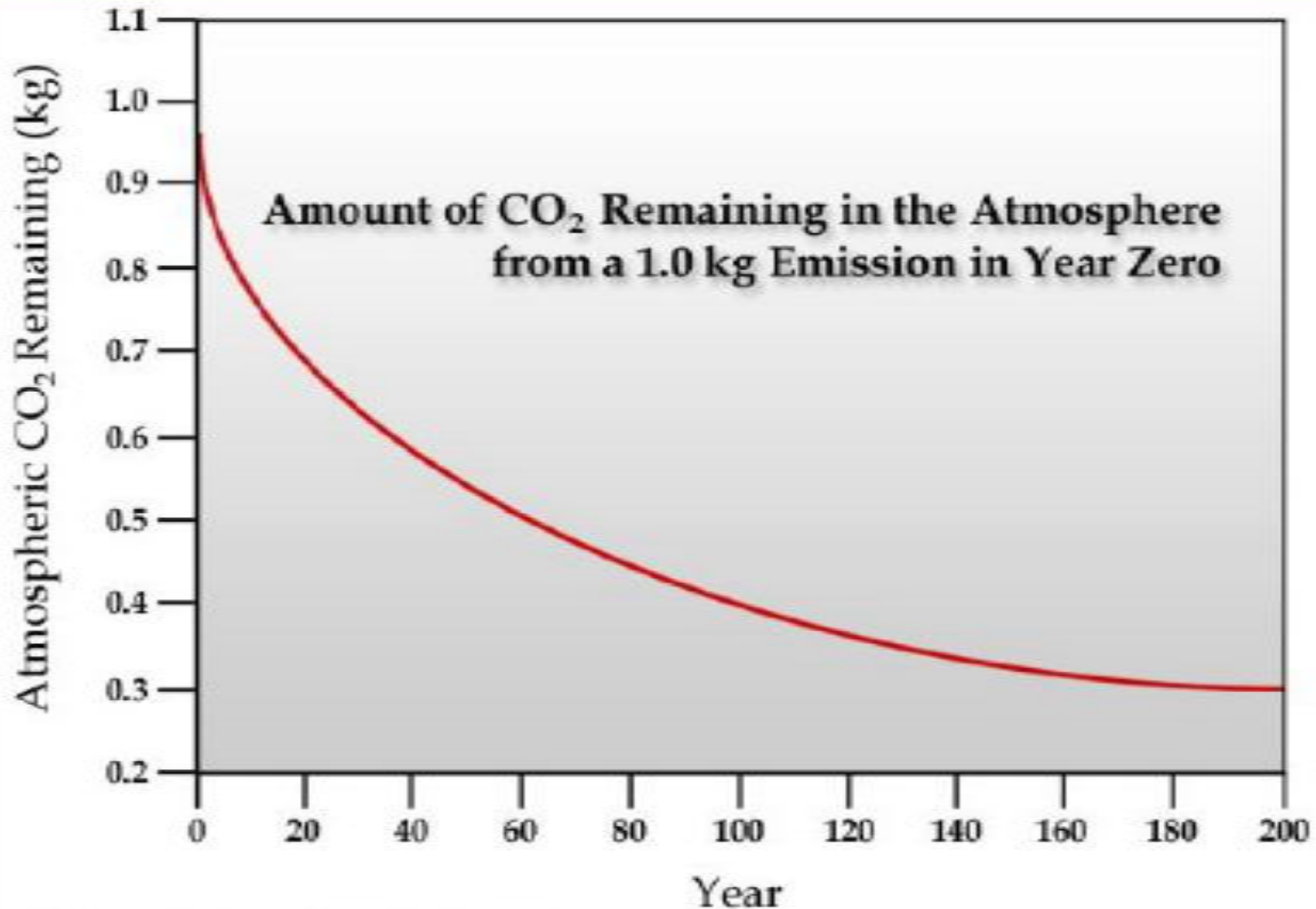
If the future continues to reflect past trends:

If we maintain the current infrastructure capacity we will increase our risk . . .

But if we improve the infrastructure capacity can we decrease our risk? Can we improve our resiliency?



CO₂ persists in the atmosphere



Mitigation + Adaptation

Many plans and actions focus on Mitigation.

Mitigation is necessary.

Adaptation is as necessary as Mitigation!

Adaptation is what we will continue to do for many years...

We need to act now!



Climate Change is not just an Environmental Issue

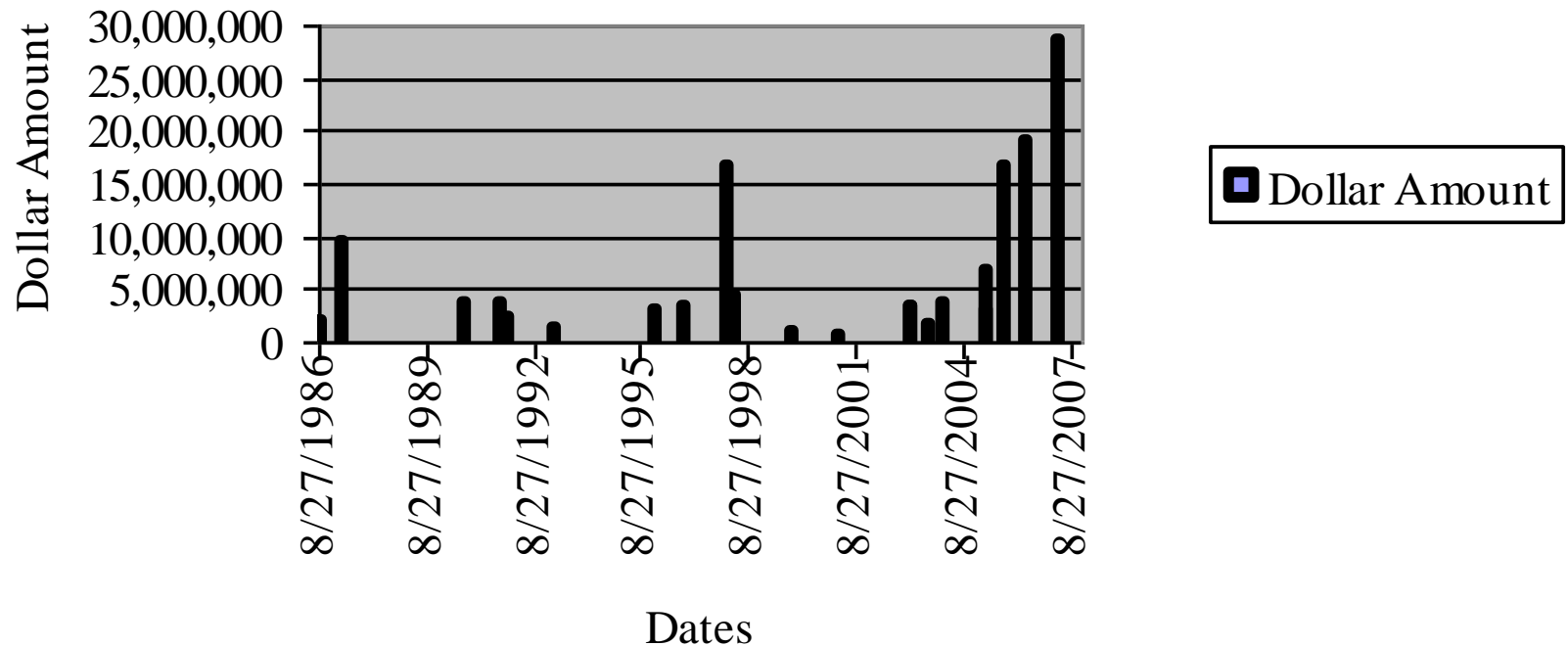
- Climate change is a public health issue
- Climate change is an infrastructure issue
- Climate Change is an economic issue

Costs of not taking action are high

- Cost:
Pro-active costs < Reactive costs
- Inaction & Action:
Both have consequences!

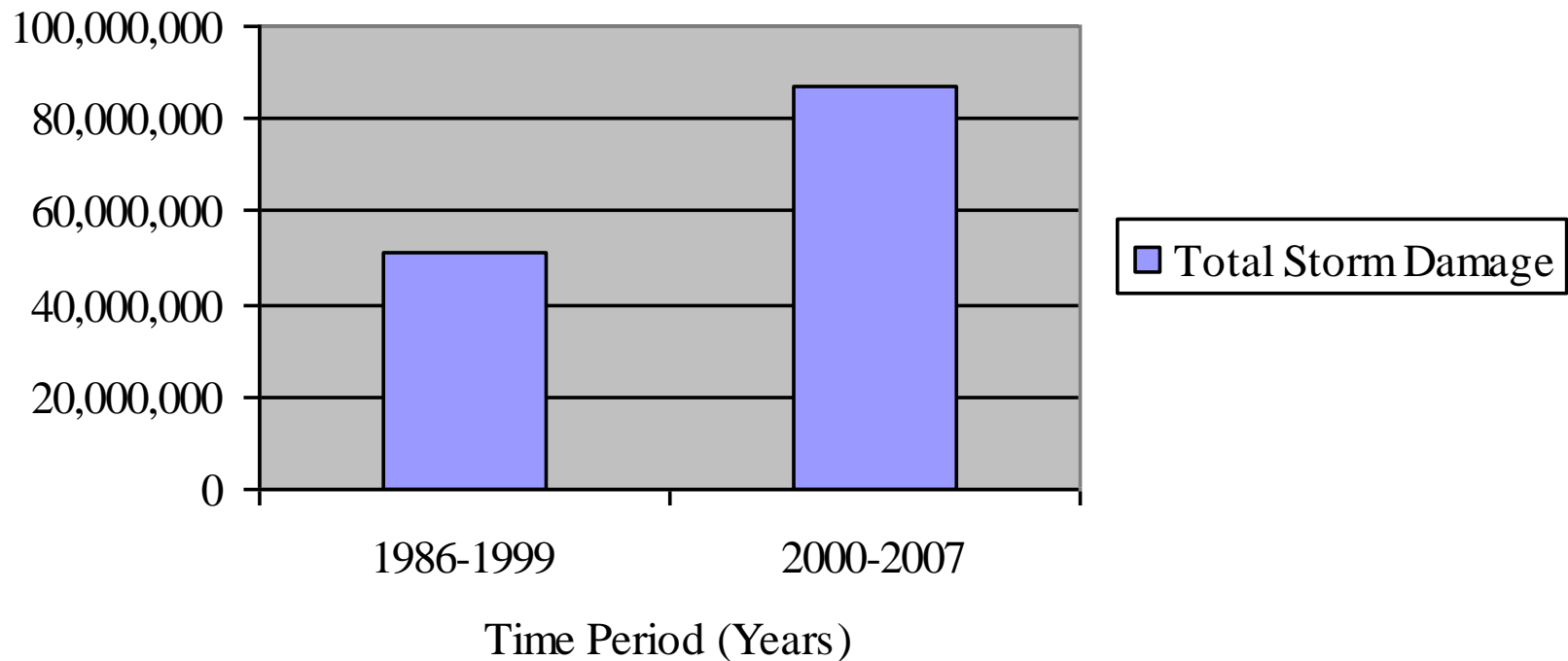
Costs of Presidentially Declared Disasters In NH

Individual Storm Event Damage

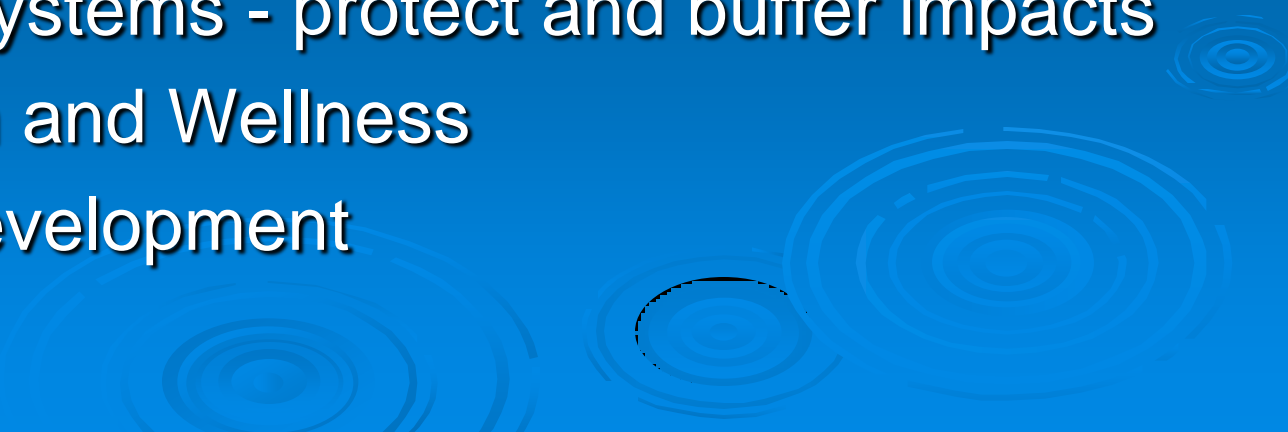


Costs of Presidentially Declared Disasters In NH

Total Storm Damage in New Hampshire



What do we do?

- We must incorporate into our local, regional and state-wide planning efforts focus on:
 - Built Environment - resilience to impacts
 - Natural Ecosystems - protect and buffer impacts
 - Public Health and Wellness
 - Economic Development
- 

Money and the Mindset

- Pro-active planning requires a shift in the mindset and the allocation of funding.
- Act now with an understanding that action without all the most “complete knowledge” in place is better than not acting.
- Climate Change will exacerbate the impact of traditional stressors and it will create new stressors.
- Establish “No Regrets” strategies.

The Built Environment

- Upgrade infrastructure when repairing or replacing. Spend a little extra to improve.
- Re-examine our engineering calculations based on the projected future, not the past (e.g. roads, landfills, WWTFs).
- Increase resilience to and recovery from extreme weather events.
- Explore ways to move existing development out of harm's way.

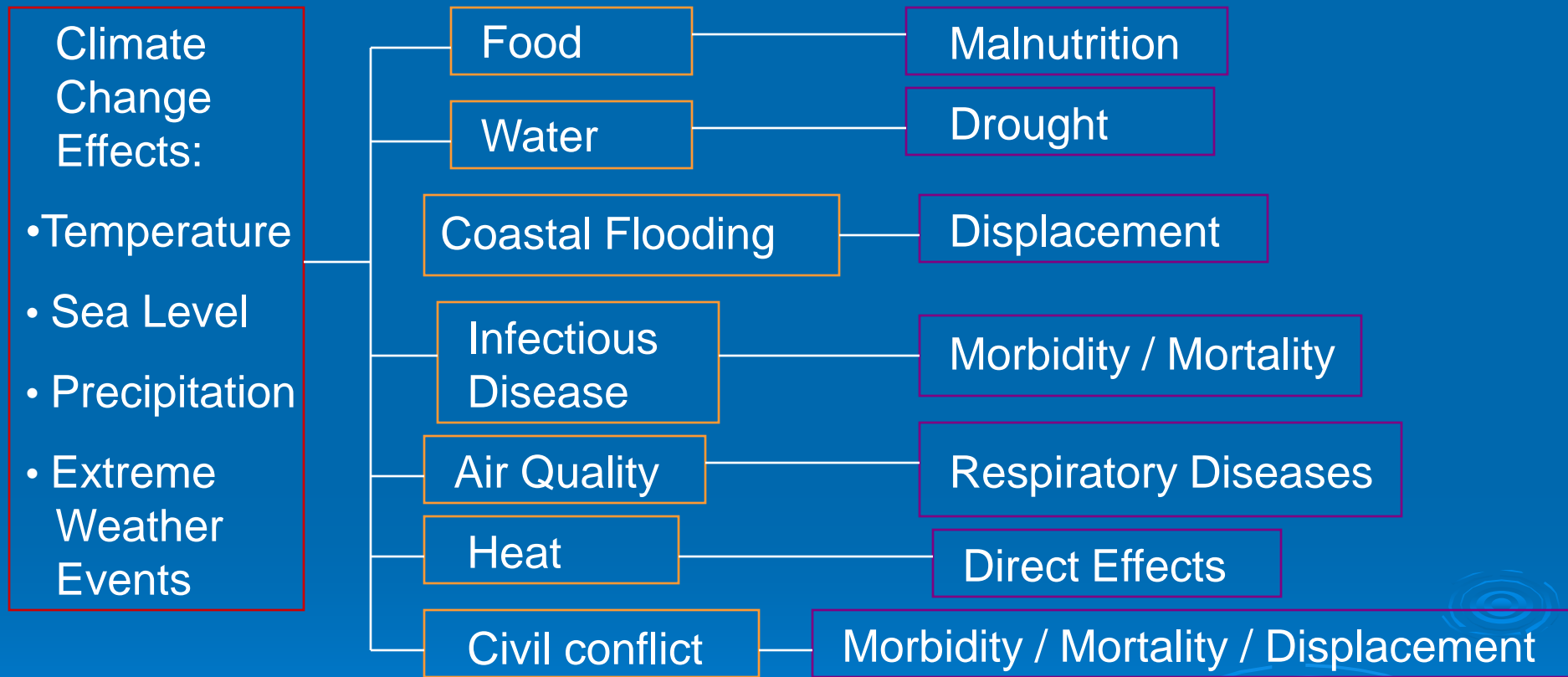
The Land

- Create retreat policies for flood plain and coastal properties.
- Guide future development away from most vulnerable flood prone areas. Maintain adequate setbacks.
- Encourage appropriate growth in developed areas and protect natural areas. Intact ecosystems are more resilient.
- Maintain agricultural lands to grow food locally and open spaces to protect our drinking water.

The People

- What is hard for at risk populations (elderly, low income, chronically ill, and children) will become worse.
 - Recovering from extreme weather events
 - Access to services including clean air, food, water, transportation, heating & cooling, health care and potential re-location
 - Cost of transportation
 - Many at risk populations already live in vulnerable areas

Potential Impacts of Climate Change on Human Health



The Economy

- Use the innovation that got us here to get us to where we need to be.
- Provide incentives to develop new technologies and green businesses.
- Focus on adaptive technologies and technical assistance services.
- Assist existing businesses in adapting to Climate Change.

Adaptation to Climate Change is Necessary on All Levels

- Ecological
- Social
- Economic

Think Resilience!

The background of the slide features several concentric, light blue circular ripples, resembling water droplets hitting a surface, which are positioned in the lower right quadrant.

“I think everyone’s focus originally was on mitigation but there is a clear understanding now that we have to look at adaptation. The fact is (climate change) is already here and to ignore steps that need to be taken, I think, you do at your own peril.”

Maryland Senator Paul Pinsky
Chair of the Environment Subcommittee
State News August 2008

A pair of hands, with fingers spread, gently cradles a small, realistic model of the Earth. The globe shows the continents of Africa, Europe, and Asia, along with the surrounding oceans and swirling white clouds. The hands are positioned at the bottom and sides of the globe, with the thumbs pointing towards the center. The background is a solid black, making the globe and hands stand out. The entire image is framed by a blue border.

**If not now,
When?
If not today,
Then,
What happens tomorrow?**